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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Qi Chen

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BACON & THOMAS, PLLC

625 SLATERS LANE

FOURTH FLOOR

ALEXANDRIA, VA 22314-1176

EXAMINER

LEE, BENNY T

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,507	Applicant(s) CHEN ET AL.	
	Examiner Benny Lee	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>16 June 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

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35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: Page 1, line 31 & page 2, line 8, note that "unfavourable" should be appropriately spelled as --unfavorable-- at each occurrence. Page 1, line 33, note that --using a-- should be inserted between "without" & "HF-cable" for idiomatic clarity.

The disclosure is objected to because of the following informalities: In the preliminary amendment, note that the instruction to "delete page 9 in its entirety" is not understood (i.e. there does not appear to be a page 9 in the specification) and thus such amendment has not been entered. Page 4, line 29, note that --(i.e. TEM + TE11)-- should be inserted between "TE11" & "waves" for consistency with the labeling in Fig. 1. Page 5, line 22, note that --through the exciter pin tip 22-- should be inserted after "conductor 14" for an appropriate characterization. Page 6, line 3, note that --(Fig. 3)-- should be inserted after "rear wall 18" & "feedthrough 28", respectively for consistency with the labeling in that drawing figure; lines 4, 5, note that "(see Fig. 2)" should be rewritten as --(see Figs. 2 and 4)-- for consistency with the labeling in those drawing figures. Appropriate correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the conical bore of the hollow conductor (i.e. claim 9) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following claims have been found to be objectionable for reasons set forth below:

In claim 1, line 7, note that --extending-- should be inserted prior to “away” for an appropriate characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7, 8, 10, 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the German (‘490) publication (cited by applicants’).

As evident from the drawing figure, a transition from a coaxial line (i.e. 3, 4, 5) to a hollow cylindrical waveguide bore (i.e. 5) is provided through a rear wall (i.e. 2) of the waveguide. Note that the transition further includes an exciter pin (6) connected to the coaxial line through inner conductor elements (4, 5) and connected at an opposite end to a bottom wall of

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the waveguide. Moreover, note that the coaxial line is eccentrically located or offset from a central longitudinal axis of the waveguide (1).

Claims 7, 8, 10, 11, 13, 16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the German ('945) publication (cited by applicants').

As evident from drawing figure 3, a transition from a coaxial line (1) to a hollow cylindrical waveguide bore (i.e. 2) is provided through a rear wall (i.e. 4) of the waveguide. Note that the transition further includes an exciter pin (3) connected to the coaxial line through inner conductor elements of the coaxial line (1) and connected at an opposite end to a bottom wall of the waveguide. Moreover, note that the coaxial line is eccentrically located or offset from a central longitudinal axis of the waveguide (1). Furthermore, note that a dielectric member (5) fills the waveguide (2).

Claims 7, 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by any one of Landry et al, Schaedla, Anderson and Borghetti (cited by applicants').

Note that each reference discloses an arrangement for coupling electromagnetic energy from a coaxial cable to a waveguide comprising: a hollow conductor (i.e. hollow waveguide 26 in Landry et al; waveguide assembly 12 in Schaedla; hollow cylindrical waveguide 1 in Anderson; waveguide 10 in Borghetti) having side walls and an rear wall (i.e. connector fitting 18/conductor block 20 in Landry et al; guide 18 in Schaedla; end wall 40 in Anderson; unlabeled back wall in Borghetti) attached to the sidewall at an end of the waveguide. Note that an inner coaxial conductor (i.e. 16 in Landry; the center pin of the coaxial connector in Schaedla; center conductor 36 in Anderson; center conductor 16 in Borghetti) is disposed with respect to the rear wall as to enter into the hollow conductor waveguide. Moreover, note that the inner conductor is

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connected within the hollow waveguide conductor by an exciter pin (i.e. exciter 10 in Landry et al; L-shaped launcher element 10 in Schaedla; ridge plate 34 in Anderson; integral loop 17 in Borghetti) and that a tip end (i.e. angled portion 13 in Landry et al; the leg of the L-shape launcher element 10 in Schaedla; the distal end of plate 34 in Anderson; web 18 in Borghetti), which electrically contacts the side wall of the hollow waveguide conductor (Fig. 1 & column 2, lines 40-42 in Landry et al; Fig. 2 & column 2, lines 56-60 in Schaedla; Fig. 1 & column 3, lines 53-56; FIG. 3 & column 2, lines 37-39 in Borghetti). As evident from each reference the hollow waveguide conductor is defined by a cylindrical bore (i.e. waveguide 26 is a hollow cylinder of rectangular cross-section in Landry et al; wavguide assembly 12 is a hollow cylinder of rectangular cross-section in Schaedla; waveguide 1 is a hollow cylindrical waveguide of circular cross-section in Anderson; waveguide 10 of rectangular cross-section in Borghetti).

Claim 11 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Landry et al.

Note in Landry et al that the hollow waveguide conductor is filled with a dielectric material transformer (12) as evident from Fig. 1 & as described at column 2, lines 10-20.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Schaedla, Anderson and Borghetti (cited by applicants') in view of Commault et al.

Note that each primary reference discloses the claimed invention except that the coaxial conductor does not enter the rear wall of the hollow waveguide eccentrically.

Commault et al discloses a transition between a coaxial line and a waveguide, where the coaxial line enters the waveguide from a rear or end wall at an eccentric location (i.e. a location offset from the longitudinal axis of the waveguide). Such an offset feed arrangement promotes the passage of odd type TEM modes (in the coaxial line) to even type (fundamental) TE modes (in the waveguide).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the coaxial conductor entering the rear wall of the hollow waveguide conductor of each primary reference to have been in an offset or eccentric location, such as taught by Commault et al. Such a modification would have been considered obvious since it would have provided the benefit of promoting coupling of odd TEM modes in the coaxial line or conductor to even fundamental modes in the waveguide, thereby suggesting the obviousness of such a modification.

Claims 10, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landry et al in view of Commault.

Landry et al discloses the claimed invention, including the presence of a dielectric transformer (i.e. 12) disposed within the hollow waveguide bore, but fails to disclose the eccentrically disposed coaxial line configuration.

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As described in the preceding rejection, Commault discloses that a coaxial line to waveguide transition can have an eccentrically or offset coaxial line for promoting odd TEM modes (in the coaxial line) to even fundamental modes (within the waveguide).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the coaxial line to waveguide transition to have included an eccentric or offset coaxial line, such as taught by Commault, for providing the benefits of desirable mode conversion, as taught by Commault, in the Landry et al type of transition, for the same reasons as set forth in the preceding rejection.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Landry et al in view of Hamasaki.

Landry et al discloses the claimed invention except for the dielectric transformer being comprised of a perfluoro plastic material.

Hamasaki provides an exemplary disclosure of a transition from a transmission line to a waveguide and includes a waveguide filled with low loss perfluoro plastic material, such as Teflon.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the dielectric transformer (12) in Landry et al to have been comprised of Teflon. Such a modification would have been considered obvious since the generic nature of the dielectric material of the transformer (12) would have suggested that any equivalent type of dielectric material (e.g. Teflon) would have been usable therewith, thereby suggesting the obviousness of such a modification. Moreover, as would have been known to those of ordinary skill in the art, the use of materials, such as Teflon, would have been desirable, since such

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materials provide the benefit of a low loss material, thereby further suggesting the obviousness of such a modification.

Claims 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burger et al in view of Borghetti (cited by applicants').

Burger et al discloses a horn antenna including a transition from a coaxial line to a waveguide comprising; a hollow conical shape conductor (i.e. horn 25) including a conically shaped side sidewall and a rear wall (see column 4, line 52) of a circular waveguide (i.e. 13); a coaxially configured wire connects at one end thereof to the inner conductor of coaxial line 17 entering the rear wall of the waveguide (e.g. see Fig. 3) and has the other end thereof connected to a conductive surface (i.e. rear wall) of the waveguide (13) to thereby constitute a conductive coupling loop. Note that the conical shape horn includes a hollow space which inherently constitutes a conical bore. However, Burger et al differs from the claimed invention in that it lacks the conductive wire being electrically connected to the waveguide at a location away from the rear wall.

Borghetti discloses a transition from a coaxial line (i.e. 11) to a hollow waveguide (i.e. 10) comprising: a loop structure (i.e. 17) having one end thereof connected to the inner conductor (i.e. 16) of the coaxial line (11) and the other end thereof (i.e. web 18) being electrically connected to the bottom wall of the waveguide (10) away from the rear wall of the waveguide. Note that such a configuration avoids the difficulties of needing to determine the curvature of a resultant loop by using a straight line loop configuration.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have substituted the loop assembly (i.e. 17) as taught by Borghetti in place of the conductive

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wire loop (i.e. 33) of Burger et al. Such a modification would have been considered an obvious substitution of art recognized equivalent conductive loop structures for structures in the same field of endeavor (i.e. transitions from a coaxial line to a waveguide through a conductive loop coupling), thereby suggesting the obviousness of such a modification. Moreover, note that the use of a conductive loop of the type taught by Borghetti would have provided the benefit of avoiding having to determine a precise loop curvature (i.e. such as would have been needed for the type of loop in Burger et al) through the use of the linear loop coupling taught in Borghetti, thereby further suggesting the obviousness of such a modification. Further, it should be noted that as an obvious consequence of the above modification, the resultant conductive loop structure (i.e. the loop structure 17 as taught in Borghetti) would necessarily have been connected to the waveguide at a location away from the rear wall, such as to have been consistent with the teaching in Borghetti.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claim 9 above, and further in view of Commault.

The above combination discloses the claimed invention except for the coaxial line being in an eccentric or offset configuration.

However, it would have been obvious in view of the references, taken as a whole, to have modified the coaxial line of the above combination to have included an eccentric or offset coaxial line, such as taught by Commault (see preceding rejections for detail description of the Commault reference), such as to provide desired mode conversion between the coaxial line and the waveguide, such as taught by Commault, thereby suggesting the obviousness of such a modification.

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Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claim 9 above, and further in view of Landry et al.

The above combination discloses the claimed invention except for the hollow waveguide conductor being filled with dielectric material.

However, it would have been obvious in view of the references, taken as a whole, to have modified the above combination to have further included a dielectric material transformer (i.e. 12), such as taught by Landry et al. Such a modification would have provided the benefits of providing a dielectric material transformer to a structure from the same field of endeavor (i.e. transition from a coaxial line to a waveguide), thereby suggesting the obviousness of such a modification.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

**/BENNY LEE/
PRIMARY EXAMINER
ART UNIT 2817**

B. Lee